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TO: Each Supervisor

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SUBJECT: **IMPLEMENTATION OF THE ENTERPRISE LABORATORY INFORMATION SYSTEM AT LAC+USC HEALTH CARE NETWORK**

On April 22, 2003, the Los Angeles Times ran an article regarding difficulties associated with the implementation of a new laboratory information system at LAC+USC Health Care Network (LAC+USC). This memo is to provide you additional information regarding the Enterprise Laboratory Information System (ELIS) and the Department's plans for further implementation across the system.

Background

The Department of Health Services (DHS) historically operated four disparate laboratory information systems across its hospitals, comprehensive health centers, and Public Health without the ability to communicate orders and results across facilities. In order to integrate the collection and availability of laboratory information, the Department decided to move to a single enterprise solution across all DHS facilities.

Prior to the Department's decision to integrate its laboratory information systems, King/Drew Medical Center (KDMC), working with the Internal Services Department (ISD), entered into a contract agreement with Sunquest Information Services in 1991 for a computerized laboratory information system. Subsequently, Public Health entered into a contract amendment in 1998, also utilizing the existing ISD agreement, with Sunquest

Information Services for a computerized laboratory information system. In 2001, Olive View-UCLA Medical Center (OVMC) requested an amendment to the existing agreement with Sunquest to facilitate the purchase of the Sunquest Laboratory Information System as well. In each instance the system was installed on schedule and has operated reliably.

After consultation with the County Chief Information Officer, the Department decided to move forward with implementing the Sunquest Information System across all DHS facilities. This decision was made in part based on the positive experience of KDMC and Public Health in utilizing the Sunquest system and the fact that having the system already in place in some DHS facilities would facilitate the transition to a DHS-wide solution. In 2001, MISYS Health Care Systems purchased Sunquest.

Laboratory orders and results information are managed by a combination of the MISYS ELIS and the QuadraMed Affinity Order Management module. Order Management is in place across most DHS facilities with the exception of Public Health and LAC+USC, where it is in limited production use. In the ELIS/Affinity combined environment, a laboratory test request for a patient is entered into the Affinity system and then transferred electronically to the ELIS where all the laboratory data for that patient is accumulated, stored and reported back to the Affinity system. Once the laboratory data is collected into ELIS, it is accessible to any authorized ELIS user from any DHS facility that is "live" on ELIS.

Implementation of MISYS

In January 2002, DHS began staff training, hardware installation, and software configuration to create the ELIS. The Department subsequently established an ELIS Steering Committee to provide oversight and policy guidance to this project.

KDMC was the first DHS facility to begin production use of the ELIS on March 17, 2003, with only minor impact on laboratory workflow. KDMC had been working with the MISYS product for several years and staff was familiar with most of the features and functions of the ELIS. KDMC was also experienced in using the Affinity Order Management module for laboratory data. As a result of this experience, staff at KDMC was able to adapt to and accommodate minor disruptions related to implementation of the ELIS.

Unfortunately, the same circumstances did not exist at LAC+USC, which went forward with production use of ELIS on April 14, 2003. Although LAC+USC was using Affinity Order Management, the facility had not begun using it for laboratory order management. Neither did staff have previous experience with MISYS.

The implementation date for LAC+USC had been delayed on two occasions to resolve implementation problems that were recognized in the planning and testing stages. In light of the problems experienced and the fact that LAC+USC did not have the same experience or history

with the two systems as did KDMC, both DHS Information Systems and MISYS should have provided additional support to LAC+USC to ensure a smooth transition to the new system. The problems with the LAC+USC implementation were primarily related to the time required for the laboratory staff to enter the order in the Affinity system and a problematic interface to the Beckman Coulter robot, which is utilized to process laboratory specimens. Once the staff became accustomed to Affinity and developed solutions for unanticipated problems, the backlog experienced on Tuesday, April 15, and Wednesday, April 16 diminished significantly. In order to minimize the impact of the transition to both ELIS and the Affinity system on the patient care areas of the hospital, it had been decided that the entry of all laboratory orders would occur in the laboratory. This decision, however, resulted in the laboratory staff being overwhelmed for the first 48 hours of implementation as they learned how to use the system.

On Wednesday, April 16, the Beckman Coulter robot stopped working and was out of service for 15 hours. The combination of the increased data entry workload and the failure of the Beckman Coulter robot led to a delay in providing test results to physicians of up to 8 hours for STAT lab orders, which are usually completed within one hour, and up to 48 hours for routine orders.

In response to this backlog, the hospital's Emergency Room was closed to incoming ambulance traffic for six hours, from midnight to 6:00 A.M. on both Wednesday April 16, and Thursday April 17. Emergency Room closures, for a variety of reasons, are not an unusual occurrence at LAC+USC and this closure must be understood in that context. The other major clinical impact occurred in the Oncology Clinic, where problems with entering laboratory orders resulted in approximately 30 patients having to wait an extra day for their scheduled treatment. The facility is following the progress of these patients to ensure there is no adverse clinical consequence as a result of the delay in treatment.

The entering and processing of laboratory orders at the Roybal, El Monte, and Hudson Comprehensive Health Centers, where orders were entered directly into Affinity Order Management, proceeded without incident during the transition to the MISYS system.

By Friday, April 18, 2003, the backlog of laboratory tests had decreased significantly and the laboratory was operating at close to normal processing times by the end of the weekend. The Beckman Coulter robot continues to present periodic problems that MISYS and DHS staff are continuing to work to resolve. It is an old instrument that, in retrospect, should have been replaced prior to the ELIS implementation. LAC+USC has ordered a replacement instrument and it is scheduled to arrive within a few months. Sporadic delays in label printing for specimens that have occurred during the week are also receiving continuing attention and noticeable improvement has been achieved, but it is too early to declare final resolution.

The appropriate scope for the clinical technology infrastructure for DHS is enterprise-wide, not the single facility. The ELIS implementation at LAC+USC does not change that philosophy. The MISYS system will be implemented at the remaining hospitals and is expected to be implemented throughout DHS by spring of 2004.

Implementation at the next sites will proceed only when all of the clinically significant issues at LAC+USC have been resolved.

REVIEW AND PLAN FOR THE FUTURE

DHS Information Systems and MISYS staff have conducted an analysis of the events that transpired during the ELIS implementation at LAC+USC and have developed recommendations to improve the implementation process at the remaining DHS facilities. Among the process changes that will be implemented are:

- Avoid simultaneous installation and implementation of two complex information systems that each have a significant operational impact;
- To the greatest extent possible, new systems should be piloted in a small controlled environment, prior to facility-wide production use;
- Human resource need projections will not be based on the experience at other DHS facilities that have a substantially different set of operational circumstances;
- DHS/vendor system-wide "Go-Live SWAT Teams" should be established for enterprise projects and follow the implementation from facility to facility;
- Complete workflow modeling under the new system is necessary to accurately assess the operational impact of a new information system; and
- Key processing steps should be benchmarked in advance of the new system implementation in order to predict the impact of the staff learning curve during the early days of production use.

The Department's Information Systems staff will continue to work with MYSIS, the Chief Information Officer, and LAC+USC to identify and correct any problems related to the implementation of the laboratory system at the facility.

I hope this has addressed any concerns you may have had with regard to this project. Please let us know if you have further questions.

TLG:JG:lc

c: Chief Administrative Officer
County Counsel
Executive Officer, Board of Supervisors